

Influence of acid and H₂O ratio on photocatalytic properties of V-doped TiO₂ synthesized by sol-gel method

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Most volatile organic compounds (VOCs) result in water pollution, air pollution, and even global warming. Among the methods of VOCs decomposition, photocatalyst is the greatly interesting field because it is easy to react under UV and visible light source at room temperature. Research on enhancement of the photocatalytic properties of catalyst is performed by doping metal or non-metal elements. In this study, V-doped TiO₂ is selected as photocatalyst and prepared by a sol-gel method under various acidic conditions. These samples are characterized by UV/Vis spectrophotometer for the band gap change and the optical property. Photocatalytic activity of V-doped TiO₂ is evaluated through methylene blue (MB) discoloration by decomposition. Based on the MB decomposition rate for specific sample, degradation ability of doped TiO₂ is confirmed by the concentration of p-xylene in the closed chamber for the UV irradiation time.